

## ATTACHMENTS FORM

**Instructions:** On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

**Important:** Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	abstract.doc	Add Attachment	Delete Attachment	View Attachment
2) Please attach Attachment 2	projectdescription.doc	Add Attachment	Delete Attachment	View Attachment
3) Please attach Attachment 3	biosketch.doc	Add Attachment	Delete Attachment	View Attachment
4) Please attach Attachment 4	organizationalchart.doc	Add Attachment	Delete Attachment	View Attachment
5) Please attach Attachment 5	letterofcommitment.pdf	Add Attachment	Delete Attachment	View Attachment
6) Please attach Attachment 6	references.doc	Add Attachment	Delete Attachment	View Attachment
7) Please attach Attachment 7	cubudgetworksheet.xls	Add Attachment	Delete Attachment	View Attachment
8) Please attach Attachment 8	budgetnarrativecu.doc	Add Attachment	Delete Attachment	View Attachment
9) Please attach Attachment 9	nistbudgetworksheet.xls	Add Attachment	Delete Attachment	View Attachment
10) Please attach Attachment 10	logicmodelform.xls	Add Attachment	Delete Attachment	View Attachment
11) Please attach Attachment 11		Add Attachment	Delete Attachment	View Attachment
12) Please attach Attachment 12		Add Attachment	Delete Attachment	View Attachment
13) Please attach Attachment 13		Add Attachment	Delete Attachment	View Attachment
14) Please attach Attachment 14		Add Attachment	Delete Attachment	View Attachment
15) Please attach Attachment 15		Add Attachment	Delete Attachment	View Attachment

# Survey on Ensuring Equal Opportunity For Applicants

OMB No. 1890-0014 Exp. 2/28/2009

**Purpose:**

The Federal government is committed to ensuring that all qualified applicants, small or large, non-religious or faith-based, have an equal opportunity to compete for Federal funding. In order for us to better understand the population of applicants for Federal funds, we are asking nonprofit private organizations (not including private universities) to fill out this survey.

Upon receipt, the survey will be separated from the application. Information provided on the survey will not be considered in any way in making funding decisions and will not be included in the Federal grants database. While your help in this data collection process is greatly appreciated, completion of this survey is voluntary.

**Instructions for Submitting the Survey**

If you are applying using a hard copy application, please place the completed survey in an envelope labeled "Applicant Survey." Seal the envelope and include it along with your application package. If you are applying electronically, please submit this survey along with your application.

Applicant's (Organization) Name: Clarkson University

Applicant's DUNS Name: [REDACTED]

Federal Program: Healthy Homes and Lead Technical Studies Program

CFDA Number: 14.906

1. Has the applicant ever received a grant or contract from the Federal government?

☒ Yes ☐ No

2. Is the applicant a faith-based organization?

☐ Yes ☒ No

3. Is the applicant a secular organization?

☐ Yes ☒ No

4. Does the applicant have 501(c)(3) status?

☒ Yes ☐ No

5. Is the applicant a local affiliate of a national organization?

☐ Yes ☒ No

6. How many full-time equivalent employees does the applicant have? (Check only one box).

☐ 3 or Fewer ☐ 15-50  
☐ 4-5 ☐ 51-100  
☐ 6-14 ☒ over 100

7. What is the size of the applicant's annual budget? (Check only one box.)

☐ Less Than \$150,000  
☐ \$150,000 - \$299,999  
☐ \$300,000 - \$499,999  
☐ \$500,000 - \$999,999  
☐ \$1,000,000 - \$4,999,999  
☒ \$5,000,000 or more

**Survey Instructions on Ensuring Equal Opportunity for Applicants**

OMB No. 1890-0014 Exp. 2/28/2009

Provide the applicant's (organization) name and DUNS number and the grant name and CFDA number.

1. Self-explanatory.
2. Self-identify.
3. Self-identify.
4. 501(c)(3) status is a legal designation provided on application to the Internal Revenue Service by eligible organizations. Some grant programs may require nonprofit applicants to have 501(c)(3) status. Other grant programs do not.
5. Self-explanatory.
6. For example, two part-time employees who each work half-time equal one full-time equivalent employee. If the applicant is a local affiliate of a national organization, the responses to survey questions 2 and 3 should reflect the staff and budget size of the local affiliate.
7. Annual budget means the amount of money your organization spends each year on all of its activities.

**Paperwork Burden Statement**

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this

information collection is **1890-0014**. The time required to complete this information collection is estimated to average five (5) minutes per response, including the time to review instructions, search existing data resources, gather the data needed, and complete and review the information collection.

**If you have any comments concerning the accuracy of the time estimate(s) or suggestions for improving this form, please write to:** The Agency Contact listed in this grant application package.

America's Affordable Communities

U.S. Department of Housing  
and Urban DevelopmentOMB approval no. 2510-0013  
(exp. 03/31/2010)

Initiative

\* Organization Name:

Clarkson University

## Questionnaire for HUD's Initiative on Removal of Regulatory Barriers

Part A. Local Jurisdictions. Counties Exercising Land Use and Building Regulatory Authority and  
Other Applicants Applying for Projects Located in such Jurisdictions or Counties  
[Collectively, Jurisdiction]

	1	2
1. Does your jurisdiction's comprehensive plan (or in the case of a tribe or TDHE, a local Indian Housing Plan) include a "housing element"? A local comprehensive plan means the adopted official statement of a legislative body of a local government that sets forth (in words, maps, illustrations, and/or tables) goals, policies, and guidelines intended to direct the present and future physical, social, and economic development that occurs within its planning jurisdiction and that includes a unified physical plan for the public development of land and water. If your jurisdiction does not have a local comprehensive plan with a "housing element," please enter no. If no, skip to question # 4.	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
2. If your jurisdiction has a comprehensive plan with a housing element, does the plan provide estimates of current and anticipated housing needs, taking into account the anticipated growth of the region, for existing and future residents, including low, moderate and middle income families, for at least the next five years?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
3. Does your zoning ordinance and map, development and subdivision regulations or other land use controls conform to the jurisdiction's comprehensive plan regarding housing needs by providing: a) sufficient land use and density categories (multifamily housing, duplexes, small lot homes and other similar elements); and, b) sufficient land zoned or mapped "as of right" in these categories, that can permit the building of affordable housing addressing the needs identified in the plan? (For purposes of this notice, "as-of-right," as applied to zoning, means uses and development standards that are determined in advance and specifically authorized by the zoning ordinance. The ordinance is largely self-enforcing because little or no discretion occurs in its administration.). If the jurisdiction has chosen not to have either zoning, or other development controls that have varying standards based upon districts or zones, the applicant may also enter yes.	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
4. Does your jurisdiction's zoning ordinance set minimum building size requirements that exceed the local housing or health code or is otherwise not based upon explicit health standards?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

5. If your jurisdiction has development impact fees, are the fees specified and calculated under local or state statutory criteria? If no, skip to question #7. Alternatively, if your jurisdiction does not have impact fees, you may enter yes.	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
6. If yes to question #5, does the statute provide criteria that sets standards for the allowable type of capital investments that have a direct relationship between the fee and the development (nexus), and a method for fee calculation?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
7. If your jurisdiction has impact or other significant fees, does the jurisdiction provide waivers of these fees for affordable housing?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
8. Has your jurisdiction adopted specific building code language regarding housing rehabilitation that encourages such rehabilitation through gradated regulatory requirements applicable as different levels of work are performed in existing buildings? Such code language increases regulatory requirements (the additional improvements required as a matter of regulatory policy) in proportion to the extent of rehabilitation that an owner/developer chooses to do on a voluntary basis. For further information see HUD publication: "Smart Codes in Your Community: A Guide to Building Rehabilitation Codes" ( <a href="http://www.huduser.org/publications/destech/smartcodes.html">www.huduser.org/publications/destech/smartcodes.html</a> )	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
9. Does your jurisdiction use a recent version (i.e. published within the last 5 years or, if no recent version has been published, the last version published) of one of the nationally recognized model building codes (i.e. the International Code Council (ICC), the Building Officials and Code Administrators International (BOCA), the Southern Building Code Congress International (SBCI), the International Conference of Building Officials (ICBO), the National Fire Protection Association (NFPA)) without significant technical amendment or modification? In the case of a tribe or TDHE, has a recent version of one of the model building codes as described above been adopted or, alternatively, has the tribe or TDHE adopted a building code that is substantially equivalent to one or more of the recognized model building codes?  Alternatively, if a significant technical amendment has been made to the above model codes, can the jurisdiction supply supporting data that the amendments do not negatively impact affordability?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
10. Does your jurisdiction's zoning ordinance or land use regulations permit manufactured (HUD-Code) housing "as of right" in all residential districts and zoning classifications in which similar site-built housing is permitted, subject to design, density, building size, foundation requirements, and other similar requirements applicable to other housing that will be deemed realty, irrespective of the method of production?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes

11. Within the past five years, has a jurisdiction official (i.e., chief executive, mayor, county chairman, city manager, administrator, or a tribally recognized official, etc.), the local legislative body, or planning commission, directly, or in partnership with major private or public stakeholders, convened or funded comprehensive studies, commissions, or hearings, or has the jurisdiction established a formal ongoing process, to review the rules, regulations, development standards, and processes of the jurisdiction to assess their impact on the supply of affordable housing?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
12. Within the past five years, has the jurisdiction initiated major regulatory reforms either as a result of the above study or as a result of information identified in the barrier component of the jurisdiction's "HUD Consolidated Plan?" If yes, attach a brief list of these major regulatory reforms.  <i>(If you have attachments that are electronic files please scroll to bottom of page 5 and attach. For information that is not in an electronic format use the eFax method. See the General Section Instructions for eFaxing.)</i>	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
13. Within the past five years has your jurisdiction modified infrastructure standards and/or authorized the use of new infrastructure technologies (e.g. water, sewer, street width) to significantly reduce the cost of housing?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
14. Does your jurisdiction give "as-of-right" density bonuses sufficient to offset the cost of building below market units as an incentive for any market rate residential development that includes a portion of affordable housing? (As applied to density bonuses, "as of right" means a density bonus granted for a fixed percentage or number of additional market rate dwelling units in exchange for the provision of a fixed number or percentage of affordable dwelling units and without the use of discretion in determining the number of additional market rate units.)	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
15. Has your jurisdiction established a single, consolidated permit application process for housing development that includes building, zoning, engineering, environmental, and related permits? Alternatively, does your jurisdiction conduct concurrent, not sequential, reviews for all required permits and approvals?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
16. Does your jurisdiction provide for expedited or "fast track" permitting and approvals for all affordable housing projects in your community?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
17. Has your jurisdiction established time limits for government review and approval or disapproval of development permits in which failure to act, after the application is deemed complete, by the government within the designated time period, results in automatic approval?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
18. Does your jurisdiction allow "accessory apartments" either as: a) a special exception or conditional use in all single-family residential zones or, b) "as of right" in a majority of residential districts otherwise zoned for single-family housing?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
19. Does your jurisdiction have an explicit policy that adjusts or waives existing parking requirements for all affordable housing developments?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
20. Does your jurisdiction require affordable housing projects to undergo public review or special hearings when the project is otherwise in full compliance with the zoning ordinance and other development regulations?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Total Points:		

**Part B. State Agencies and Departments or Other Applicants for Projects Located in  
Unincorporated Areas or Areas Otherwise Not Covered in Part A**

	1	2
1. Does your state, either in its planning and zoning enabling legislation or in any other legislation, require localities regulating development have a comprehensive plan with a "housing element?" If no, skip to question # 4	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
2. Does your state require that a local jurisdiction's comprehensive plan estimate current and anticipated housing needs, taking into account the anticipated growth of the region, for existing and future residents, including low, moderate, and middle income families, for at least the next five years?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
3. Does your state's zoning enabling legislation require that a local jurisdiction's zoning ordinance have a) sufficient land use and density categories (multifamily housing, duplexes, small lot homes and other similar elements); and, b) sufficient land zoned or mapped in these categories, that can permit the building of affordable housing that addresses the needs identified in the comprehensive plan?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
4. Does your state have an agency or office that includes a specific mission to determine whether local governments have policies or procedures that are raising costs or otherwise discouraging affordable housing?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
5. Does your state have a legal or administrative requirement that local governments undertake periodic self-evaluation of regulations and processes to assess their impact upon housing affordability address these barriers to affordability?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
6. Does your state have a technical assistance or education program for local jurisdictions that includes assisting them in identifying regulatory barriers and in recommending strategies to local governments for their removal?	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
7. Does your state have specific enabling legislation for local impact fees? If no skip to question #9.	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
8. If yes to the question #7, does the state statute provide criteria that sets standards for the allowable type of capital investments that have a direct relationship between the fee and the development (nexus) and a method for fee calculation?	<input type="checkbox"/> No	<input type="checkbox"/> Yes
9. Does your state provide significant financial assistance to local governments for housing, community development and/or transportation that includes funding prioritization or linking funding on the basis of local regulatory barrier removal activities?	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes

<p>10. Does your state have a mandatory state-wide building code that a) does not permit local technical amendments and b) uses a recent version (i.e. published within the last five years or, if no recent version has been published, the last version published) of one of the nationally recognized model building codes (i.e. the International Code Council (ICC), the Building Officials and Code Administrators International (BOCA), the Southern Building Code Congress International (SBCI), the International Conference of Building Officials (ICBO), the National Fire Protection Association (NFPA)) without significant technical amendment or modification?</p> <p>Alternatively, if the state has made significant technical amendment to the model code, can the state supply supporting data that the amendments do not negatively impact affordability?</p>	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
<p>11. Has your jurisdiction adopted specific building code language regarding housing rehabilitation that encourages such rehabilitation through graduated regulatory requirements applicable as different levels of work are performed in existing buildings? Such code language increases regulatory requirements (the additional improvements required as a matter of regulatory policy) in proportion to the extent of rehabilitation that an owner/developer chooses to do on a voluntary basis. For further information see HUD publication: "Smart Codes in Your Community: A Guide to Building Rehabilitation Codes" (<a href="http://www.huduser.org/publications/destech/smartcodes.html">www.huduser.org/publications/destech/smartcodes.html</a>)</p>	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
<p>12. Within the past five years has your state made any changes to its own processes or requirements to streamline or consolidate the state's own approval processes involving permits for water or wastewater, environmental review, or other State-administered permits or programs involving housing development? If yes, briefly list these changes.</p> <p><i>(If you have attachments that are electronic files please scroll to bottom of this page and attach. For information that is not in an electronic format use the eFax method. See the General Section Instructions for eFaxing.)</i></p>	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
<p>13. Within the past five years, has your state (i.e., Governor, legislature, planning department) directly or in partnership with major private or public stakeholders, convened or funded comprehensive studies, commissions, or panels to review state or local rules, regulations, development standards, and processes to assess their impact on the supply of affordable housing?</p>	<input type="checkbox"/> No	<input checked="" type="checkbox"/> Yes
<p>14. Within the past five years, has the state initiated major regulatory reforms either as a result of the above study or as a result of information identified in the barrier component of the states' "Consolidated Plan submitted to HUD?" If yes, briefly list these major regulatory reforms.</p> <p><i>(If you have attachments that are electronic files please scroll to bottom of this page and attach. For information that is not in an electronic format use the eFax method. See the General Section Instructions for eFaxing.)</i></p>	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
<p>15. Has the state undertaken any other actions regarding local jurisdiction's regulation of housing development including permitting, land use, building or subdivision regulations, or other related administrative procedures? If yes, briefly list these actions.</p> <p><i>(If you have attachments that are electronic files please scroll to bottom of this page and attach. For information that is not in an electronic format use the eFax method. See the General Section Instructions for eFaxing.)</i></p>	<input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes
<p>Total Points:</p>		

Additional Information:

Add Attachment

Delete Attachment

View Attachment



## Facsimile Transmittal

1214916885-1249

U. S. Department of Housing  
and Urban Development  
Office of Department Grants  
Management and Oversight

OMB Approval No. 2525-0118  
exp. Date (5/30/2008)

\* Name of Document Transmitting: TBD

## 1. Applicant Information:

\* Legal Name: Clarkson University

\* Address:

\* Street1: 8 Clarkson Avenue

Street2:

\* City: Potsdam

County: St. Lawrence

\* State: NY: New York

\* Zip Code: 13699-5630

\* Country: USA: UNITED STATES

## 2. Catalog of Federal Domestic Assistance Number:

\* Organizational DUNS: [REDACTED] CFDA No.: 14.906

Title: Healthy Homes Technical Studies Grants

Program Component:

## 3. Facsimile Contact Information:

Department: Division of Research

Division: Division of Research

## 4. Name and telephone number of person to be contacted on matters involving this facsimile.

Prefix: Dr. \* First Name: Gregory

Middle Name: C.

\* Last Name: Slack

Suffix:

\* Phone Number: 315-268-6475

Fax Number: 315-268-6515

\* 5. Email: gslack@clarkson.edu

## \* 6. What is your Transmittal? (Check one box per fax)

☐ a. Certification ☐ b. Document ☐ c. Match/Leverage Letter ☒ d. Other

\* 7. How many pages (including cover) are being faxed?

1

# DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

Approved by OMB

0348-0046

<b>1. * Type of Federal Action:</b> <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	<b>2. * Status of Federal Action:</b> <input type="checkbox"/> a. bid/offer/application <input checked="" type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	<b>3. * Report Type:</b> <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
<b>4. Name and Address of Reporting Entity:</b> <input checked="" type="checkbox"/> Prime <input type="checkbox"/> SubAwardee * Name: Clarkson University * Street 1: 8 Clarkson Avenue    Street 2: _____ * City: Potsdam    State: NY: New York    Zip: 13699-5630 Congressional District, if known: _____		
<b>5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:</b>   		
<b>6. * Federal Department/Agency:</b> HUD	<b>7. * Federal Program Name/Description:</b> Healthy Homes Technical Studies Grants CFDA Number, if applicable: 14.906	
<b>8. Federal Action Number, if known:</b> _____	<b>9. Award Amount, if known:</b> \$ _____	
<b>10. a. Name and Address of Lobbying Registrant:</b> Prefix _____ * First Name: N/A    Middle Name: _____ * Last Name: N/A    Suffix: _____ * Street 1: _____    Street 2: _____ * City: _____    State: _____    Zip: _____		
<b>b. Individual Performing Services</b> (including address if different from No. 10a) Prefix _____ * First Name: N/A    Middle Name: _____ * Last Name: N/A    Suffix: _____ * Street 1: _____    Street 2: _____ * City: _____    State: _____    Zip: _____		
<b>11.</b> Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.  * Signature: Todd Travis * Name: Prefix Dr.    * First Name: Gregory    Middle Name: C. * Last Name: Slack    Suffix: _____ Title: Director of Research & Technology Transfer    Telephone No.: 315-268-6475    Date: 07/02/2008		
<small>Authorized for Local Reproduction Standard Form - LLL (Rev. 7-97)</small>		

## Application for Federal Assistance SF-424

Version 02

## \* 1. Type of Submission:

- ☐ Preapplication  
☒ Application  
☐ Changed/Corrected Application

## \* 2. Type of Application:

- ☒ New  
☐ Continuation  
☐ Revision

## \* If Revision, select appropriate letter(s):

## \* Other (Specify)

## \* 3. Date Received:

07/02/2008

## 4. Applicant Identifier:

## 5a. Federal Entity Identifier:

## \* 5b. Federal Award Identifier:

## State Use Only:

## 6. Date Received by State:

## 7. State Application Identifier:

## 8. APPLICANT INFORMATION:

## \* a. Legal Name:

Clarkson University

## \* b. Employer/Taxpayer Identification Number (EIN/TIN):

150543659

## \* c. Organizational DUNS:

## d. Address:

## \* Street1:

8 Clarkson Avenue

## Street2:

## \* City:

Potsdam

## County:

St. Lawrence

## \* State:

NY: New York

## Province:

## \* Country:

USA: UNITED STATES

## \* Zip / Postal Code:

13699-5630

## e. Organizational Unit:

## Department Name:

Division of Research

## Division Name:

Division of Research

## f. Name and contact information of person to be contacted on matters involving this application:

## Prefix:

Dr.

## \* First Name:

Gregory

## Middle Name:

C.

## \* Last Name:

Slack

## Suffix:

## Title:

Director of Research and Technology Transfer

## Organizational Affiliation:

## \* Telephone Number:

315-268-6475

## Fax Number:

315-268-6515

## \* Email:

gslack@clarkson.edu

## Application for Federal Assistance SF-424

Version 02

## 9. Type of Applicant 1: Select Applicant Type:

0: Private Institution of Higher Education

## Type of Applicant 2: Select Applicant Type:

## Type of Applicant 3: Select Applicant Type:

## \* Other (specify):

## \* 10. Name of Federal Agency:

US Department of Housing and Urban Development

## 11. Catalog of Federal Domestic Assistance Number:

14.906

## CFDA Title:

Healthy Homes Technical Studies Grants

## \* 12. Funding Opportunity Number:

FR-5200-N-07

## \* Title:

Healthy Homes and Lead Technical Studies Program

## 13. Competition Identification Number:

HTS-07

## Title:

## 14. Areas Affected by Project (Cities, Counties, States, etc.):

Potential National Impact

## \* 15. Descriptive Title of Applicant's Project:

Evaluation of resuspended particles from carpeted versus uncarpeted flooring for dust control and improved indoor air quality

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

## Application for Federal Assistance SF-424

Version 02

## 16. Congressional Districts Of:

\* a. Applicant

NY-023

\* b. Program/Project

NY-023

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment

Delete Attachment

View Attachment

## 17. Proposed Project:

\* a. Start Date:

10/01/2008

\* b. End Date:

09/30/2011

## 18. Estimated Funding (\$):

\* a. Federal

586,098.00

\* b. Applicant

\* c. State

0.00

\* d. Local

0.00

\* e. Other

\* f. Program Income

0.00

\* g. TOTAL

## \* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.☒ c. Program is not covered by E.O. 12372.

## \* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes", provide explanation.)

☐ Yes☒ No

Explanation

21. "By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)

☒ \*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

## Authorized Representative:

Prefix:

Dr.

\* First Name:

Gregory

Middle Name:

C.

\* Last Name:

Slack

Suffix:

\* Title:

Director of Research and Technology Transfer

\* Telephone Number:

315-268-6475

Fax Number:

315-268-6515

\* Email:

gslack@clarkson.edu

\* Signature of Authorized Representative:

Todd Travis

\* Date Signed:

07/02/2008

## Application for Federal Assistance SF-424

Version 02

**\* Applicant Federal Debt Delinquency Explanation**

The following field should contain an explanation if the Applicant organization is delinquent on any Federal Debt. Maximum number of characters that can be entered is 4,000. Try and avoid extra spaces and carriage returns to maximize the availability of space.

**Applicant/Recipient  
Disclosure/Update Report**

U.S. Department of Housing  
and Urban Development

OMB Approval No. 2510-0011  
(exp. 08/31/2009)

**Applicant/Recipient Information**

\* Duns Number:

\* Report Type:

INITIAL

**1. Applicant/Recipient Name, Address, and Phone (include area code):**

\* Applicant Name:

Clarkson University

\* Street1:

8 Clarkson Avenue

Street2:

\* City:

Potsdam

County:

St. Lawrence

\* State:

NY: New York

\* Zip Code:

13699-5630

\* Country:

USA: UNITED STATES

\* Phone:

315-268-6475

**2. Social Security Number or Employer ID Number:**

150543659

**\* 3. HUD Program Name:**

Healthy Homes Technical Studies Grants

**\* 4. Amount of HUD Assistance Requested/Received: \$**

586,098.00

**5. State the name and location (street address, City and State) of the project or activity:**

\* Project Name:

Evaluation of resuspended particles - Ferro

\* Street1:

8 Clarkson Avenue

Street2:

\* City:

Potsdam

County:

St. Lawrence

\* State:

NY: New York

\* Zip Code:

13699-5630

\* Country:

USA: UNITED STATES

**Part I Threshold Determinations**

\* 1. Are you applying for assistance for a specific project or activity? These terms do not include formula grants, such as public housing operating subsidy or CDBG block grants. (For further information see 24 CFR Sec. 4.3).

☐ Yes

☒ No

\* 2. Have you received or do you expect to receive assistance within the jurisdiction of the Department (HUD), involving the project or activity in this application, in excess of \$200,000 during this fiscal year (Oct. 1-Sep. 30)? For further information, see 24 CFR Sec. 4.9

☐ Yes

☒ No

If you answered " No " to either question 1 or 2, **Stop!** You do not need to complete the remainder of this form.

**However,** you must sign the certification at the end of the report.

Form HUD-2880 (3/99)

**Part II Other Government Assistance Provided or Requested / Expected Sources and Use of Funds.**

Such assistance includes, but is not limited to, any grant, loan, subsidy, guarantee, insurance, payment, credit, or tax benefit.

Department/State/Local Agency Name:

\* Government Agency Name:

Government Agency Address:

\* Street1:

Street2:

\* City:

County:

\* State:

\* Zip Code:

\* Country:

\* Type of Assistance:

\* Amount Requested/Provided: \$

\* Expected Uses of the Funds:

Department/State/Local Agency Name:

\* Government Agency Name:

Government Agency Address:

\* Street1:

Street2:

\* City:

County:

\* State:

\* Zip Code:

\* Country:

\* Type of Assistance:

\* Amount Requested/Provided: \$

\* Expected Uses of the Funds:

(Note: Use Additional pages if necessary.)

Add Attachment

Delete Attachment

View Attachment



**Part III Interested Parties.** You must decide.

1. All developers, contractors, or consultants involved in the application for the assistance or in the planning, development, or implementation of the project or activity and
2. Any other person who has a financial interest in the project or activity for which the assistance is sought that exceeds \$50,000 or 10 percent of the assistance (whichever is lower).

* Alphabetical list of all persons with a reportable financial interest in the project or activity (For individuals, give the last name first)	* Social Security No. or Employee ID No.	* Type of Participation in Project/Activity	* Financial Interest in Project/Activity (\$ and %)
<input type="text"/>	<input type="text"/>	<input type="text"/>	\$ <input type="text"/> <input type="text"/> %
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(Note: Use Additional pages if necessary.)

Add Attachment

Delete Attachment

View Attachment

**Certification**

**Warning:** If you knowingly make a false statement on this form, you may be subject to civil or criminal penalties under Section 1001 of Title 18 of the United States Code. In addition, any person who knowingly and materially violates any required disclosures of information, including intentional non-disclosure, is subject to civil money penalty not to exceed \$10,000 for each violation.  
I certify that this information is true and complete.

\* Signature:

\* Date: (mm/dd/yyyy)

Todd Travis

07/02/2008

Form HUD-2880 (3/99)

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(Exp. 01/31/2008)

## Grant Application Detailed Budget Worksheet

Name and Address of Applicant:

NIST Subaward for Proposal from:

Clarkson University

8 Clarkson Avenue, CU Box 5630

Potsdam, NY 13699-5630

## Category

Detailed Description of Budget (for full grant period)

Position or Individual	Estimated Hours	Rate per Hour	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
<b>1. Personnel (Direct Labor)</b>											
Senior Engineer	180	\$71.40	\$12,852	\$12,852	\$0						
Project Engineer #1	1,275	\$56.60	\$72,165	\$33,960							
Statistician	160	\$45.00	\$7,200	\$7,200	\$0						
Programmer	40	\$30.70	\$1,228	\$1,228	\$0						
Student Engineers	360	\$11.00	\$3,960	\$3,960	\$0						
Secretary	280	\$22.00	\$6,160	\$6,160	\$0						
Technician	915	\$27.10	\$24,797	\$6,504							
Total Direct Labor Cost			\$128,362	\$71,864							
<b>2. Fringe Benefits</b>											
Fringe benefits	Rate (%)	Base	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
	26.00%	\$128,362	\$33,374	\$18,685							
Total Fringe Benefits Cost			\$33,374	\$18,685							
<b>3. Travel</b>											
3a. Transportation - Local Private Vehicle	Mileage	Rate per Mile	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Trans - Local Private Vehicle											

# Grant Application Detailed Budget Worksheet

## Detailed Description of Budget

	Trips	Fare	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
3b. Transportation - Airfare (show destination)											
Travel from NIST to NY	3	\$500	\$1,500	\$1,500							
Subtotal - Transportation - Airfare			\$1,500	\$1,500							
3c. Transportation - Other											
	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Subtotal - Transportation - Other											
3d. Per Diem or Subsistence (Indicate location)											
Visits to NY	10	\$100	\$1,000	\$1,000							
Subtotal - Per Diem or Subsistence			\$1,000	\$1,000							
Total Travel Cost			\$2,500	\$2,500							
4. Equipment (Only items over \$5,000 Depreciated value)											
	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
	1	\$10,000	\$10,000	\$10,000							
Total Equipment Cost			\$10,000	\$10,000							

# Grant Application Detailed Budget Worksheet

## Detailed Description of Budget

5. Supplies and Materials (Items under \$5,000 Depreciated Value)		Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
5a. Consumable Supplies												
NIST will supply test dust, respirators, filters, compressed gas, tubing, fittings, batteries, flowmeters, and other miscellaneous items		1	\$2,542.00	\$2,542	\$0							
Subtotal - Consumable Supplies				\$2,542	\$0							
5b. Non-Consumable Materials												
Subtotal - Non-Consumable Materials												
Total Supplies and Materials Cost				\$2,542	\$0							
6. Consultants (Type)		Days	Rate per Day	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Total Consultants Cost												
7. Contracts and Sub-Grantees (List Individually)		Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
Total Subcontracts Cost												



# Grant Application Detailed Budget Worksheet

## Detailed Description of Budget

### 8. Construction Costs

	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
8a. Administrative and legal expenses											
Subtotal - Administrative and legal expenses											
8b. Land, structures, rights-of way, appraisal, etc											
Subtotal - Land, structures, rights-of way, ...											
8c. Relocation expenses and payments											
Subtotal - Relocation expenses and payments											
8d. Architectural and engineering fees											
Subtotal - Architectural and engineering fees											
8e. Other architectural and engineering fees											
Subtotal - Other architectural and engineering fees											



# Grant Application Detailed Budget Worksheet

	Quantity	Unit Cost	Estimated Cost	HUD Share	Applicant Match	Other HUD Funds	Other Federal Share	State Share	Local/Tribal Share	Other	Program Income
<b>8f. Project inspection fees</b>											
Subtotal - Project inspection fees											
<b>8g. Site work</b>											
Subtotal - Site work											
<b>8h. Demolition and removal</b>											
Subtotal - Demolition and removal											
<b>8i. Construction</b>											
Subtotal - Construction											
<b>8j. Equipment</b>											
Subtotal - Equipment											
<b>8k. Contingencies</b>											
Subtotal - Contingencies											
<b>8l. Miscellaneous</b>											
Subtotal - Miscellaneous											
<b>Total Construction Costs</b>											



# **Evaluation of resuspended particles from carpeted versus uncarpeted flooring for dust control and improved indoor air quality**

## ***HUD Healthy Homes Technical Studies Program***

Principal Investigator:

[REDACTED] Clarkson University, Potsdam, NY

Subcontractor:

[REDACTED] National Institute of Standards and Technology, Gaithersburg, MD

[REDACTED] National Institute of Standards and Technology, Gaithersburg, MD

[REDACTED] National Institute of Standards and Technology, Gaithersburg, MD

## **Abstract**

### **Motivation**

The resuspension of harmful pollutants and allergens from indoor surfaces poses a potential danger to human health. This risk is especially significant for children with respiratory illnesses (e.g., asthma). Residential exposures, including exposure to allergens in dust, are estimated to account for 39 percent of the excess asthma cases for children under 6 years of age in the United States (Lanphear et al., 2001). Unfortunately, very little is known regarding the rates of particle resuspension as well as the importance of factors, such as flooring material type, particle characteristics, and environmental conditions, on resuspension.

Installing hard flooring instead of carpeting is often recommended to improve indoor air quality in residences and to reduce asthma prevalence. However, evidence to support this recommendation is lacking. Carpeting is less expensive than hard wood flooring, which makes it an obvious economic choice for affordable housing. An unbiased, definitive study is needed to estimate the level of exposure reduction based on flooring choice and other important environmental factors.

### **Objective**

The proposed research will provide the needed scientific knowledge to make informed decisions on flooring choices for low-income housing that will minimize human exposure to pollutants and related impacts on human health.

### **Study Design**

The research will quantify resuspension of dust particles from human activities, model human exposures associated with resuspended particles, and communicate the results and associate recommendations in a clear, effective manner. During the first phase of the study, we will estimate resuspension rates as a function of flooring material, particle size,

particle type, and relative humidity. Results will be statistically analyzed to identify significant factors affecting the resuspension rates of particles and to determine a recommendation for minimizing exposure to resuspended particles. The second phase of research will involve assessing the relative importance of particle resuspension and related factors of significance using CONTAM, an existing fully-tested, widely used indoor air quality model, with typical exposure scenarios. The third phase of the study will be to communicate study results to the scientific community, industry experts, and the general public.

### **Expected Results**

Results from this study will significantly advance existing scientific knowledge related to particle resuspension in homes. This study will also provide practical solutions and guidance on ways to improve housing design and interior recommendations/standards to protect human health from this potential hazard.



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Institute of Standards and Technology**  
Gaithersburg, Maryland 20899.

Building 226, Room A 313

June 18, 2008

Dr. [REDACTED]  
Department of Civil and Environmental Engineering  
P.O. Box 5710  
Clarkson University  
Potsdam, NY 13699

Dear Dr. [REDACTED]

I am writing to express our interest in participating as a subcontractor under your proposal to the U.S. Department of Housing and Urban Development in response to the Healthy Homes Technical Studies NOFA CFDA No. FR-5200-N-01. The project is consistent with ongoing research activities at NIST, and I believe we can make a unique contribution based on our indoor air quality research activities. The relevant research projects here at NIST include two projects, Advanced Aerosol Transport Modeling for Indoor Environmental Analysis and Air Cleaner Performance Measurement and Prediction, which are slated for a total level of funding of \$600K for FY09. These projects will provide instrumentation, experimental procedures and analysis methods that will help support the proposed research. We would anticipate devoting on the order of \$150K of the funding under those two projects to your project if funded, which will include somewhat less than one-half an FTE of an engineer and a technician, plus some expendable items for the laboratory work. Included in our project budget are \$71,864 for 1860 hours of staff time, \$115,701 for fringe benefits and overhead, \$10,000 for equipment, and \$2500 for travel. As we have discussed previously, since we are a federal agency, we must make our expertise equally available to all organizations preparing proposals in response to this NOFA. If you have any questions, please call me at (301) 975-6418.

Sincerely,  
[REDACTED]

Group Leader, Indoor Air Quality and Ventilation  
Building Environment Division  
Building and Fire Research Laboratory

**NIST**

## CLARKSON UNIVERSITY BUDGET NARRATIVE

---

### **SALARIES AND WAGES - SENIOR PERSONNEL**

The Principal Investigator, [REDACTED], will devote 1.0 summer and 1.0 academic month per year toward the project. She will be responsible for overall project management, including supervision of the graduate students. The University has established that one month effort is equivalent to 173.33 hours.

### **SALARIES AND WAGES - OTHER PERSONNEL**

Funding for two graduate students for 3 years is requested. The students will be involved in the research activities described in the project description. The University has established that full time graduate students work no more than 1,300 hours each year (40 hours per week during the summer and 20 hours per week during the academic year).

### **FRINGE BENEFITS**

Fringe Benefits are calculated as direct costs in accordance with Clarkson University's Indirect Cost Rate Agreement with the Department of Health and Human Services. Statutory (FICA) fringes at a rate of 7.65% are charged on the PI's summer salary and full benefits at a rate of 32.7% are charged on the academic time.

**PERMANENT EQUIPMENT:** Not applicable

**MATERIALS AND SUPPLIES:** \$5,000/year is requested for research materials and supplies needed to carry out the proposed project. Such supplies may include filters, test dust, tracer particles, batteries, tubing, ducting, staging and other construction materials.

**CONTRACTUAL:** If funded, Clarkson University will subcontract a portion of the project to NIST as shown in the attached documentation.

**TRAVEL:** A total of \$5,000/year is requested for the PI to travel to Washington DC area to meet with HUD and NIST, as well as travel to at least one scientific meeting (e.g., American Association for Aerosol Research Annual Meeting).

### **OTHER DIRECT COSTS**

- **PUBLICATION COSTS/DOCUMENTATION/DISSEMINATION:** \$1,000/year in years 2 and 3, is requested for publication of research results in refereed journals related to the proposed research.
- **OTHER:**
  1. Communications and Postage: \$500 per year is requested for charges related to shipping and communication charges related to the proposed project.
  2. CARES Analytical Services: \$10,000 in year 1 and \$10,000 in year 2 is requested for analysis services provided by the Center for Air Resources and Engineering Science.

### **I. INDIRECT COSTS**

Indirect Costs are calculated in accordance with Clarkson University's Indirect Cost Rate Agreement with the Department of Health and Human Services. Currently, Clarkson is using a rate of [REDACTED] of modified total direct costs (MTDC), per DHHS Agreement signed 01/16/08. If any rate other than the appropriate negotiated rate is applied to a project due to published program restrictions or sponsor policy, all unrecovered indirect costs are designated as cost sharing by Clarkson University. Clarkson's threshold for equipment is now \$5,000 as allowed by OMB Circular A-110.

**U.S. Department of Housing and Urban Development**

OMB Approval 2535-0114 exp 2

Contract No. 2000-0114 exp. 2

Total

[illegible]

US Department of Housing and Urban Development  
OMB Approval 2535-0114 exp. 2/28/2012

Total

1	2	3	4	5	6
Policy	Planning	Programming		Impact	
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US Department of Housing and Urban Development  
OMB Approval 2535-0114 exp 2

Total

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US Department of Housing and Urban Development  
OMB Approval 2535-0114 exp. 2/28/2012

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Accountability

A. Tools for Measurement

Database

Database

Database

B. Where Data Maintained

Centralized database

Centralized database

Centralized database

C. Source of Data

Testing results

Statistics

Testing results

D. Frequency of Collection

Upon incident

Upon incident

E. Processing of Data

Computer spreadsheets

Statistical database

Relational database

Development

008 Pending

Component Name:

0



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Accountability

Development

008 Pending

Component Name:

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Development

008 Pending

Component Name:

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Development

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Component Name:

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Accountability

[REDACTED]  
Department of Civil and Environmental Engineering  
Center for Air Resources Engineering and Science  
[REDACTED] NY 13699  
Ph/Fx: [REDACTED], E-Mail: [REDACTED]

#### PROFESSIONAL PREPARATION

Stanford University	Civil and Environmental Engineering	Ph.D., 2002
Stanford University	Civil Engineering	M.S., 1992
University of Massachusetts at Amherst	Applied Mathematics	B.S., 1989

#### APPOINTMENTS

Start date	<i>Assistant Professor, Department of Civil and Environmental Engineering,</i>
01/03 – present	Clarkson University, Potsdam, NY
06/92 – 02/97	<i>Environmental Engineer/Project Manager, Camp, Dresser &amp; McKee,</i>
	Cambridge, MA
01/88 – 06/90	<i>Industrial Health System Administrator, General Electric Plastics Business</i>
	Group, Pittsfield, MA

#### REGISTRATION

Registered Professional Engineer, State of Massachusetts, # 39787 (since 1997)

#### CURRENT RESEARCH SUPPORT

REU Site Program in Environmental Sciences and Engineering: Sustainable Solutions to Emerging Environmental Problems, NSF, Time Period: 03/01/08 – 02/28/11. Award Amount: \$280,000.00, PI: A. Ferro; Co-PIs: S. Andreescu, W. Vitek.

NY STAR Center for Environmental Quality Systems/EPA Indoor Environmental Research Program Collaboration, EPA, Time Period: 09/01/04 - 08/31/08 Award Amount: \$300,000.00, PI: G. Ahmadi, Co-PI: [REDACTED]. The objective of the study is to 1) quantify through field tests the effects of human activities on exposure to pollutants, including gaseous pollutants and PM in a micro-environment, and 2) to develop models that can be used for gaseous and PM exposure assessment.

Strategically Targeted Research in Intelligent Built Environmental Systems – Phase 2, EPA, Time Period: 08/01/05 - 07/31/09 Award Amount: \$510,000.00, PI: G. Ahmadi, Co-PIs: [REDACTED], P. Hopke. The project is a continuation of the NY STAR Center for Environmental Quality Systems/EPA Indoor Environmental Research Program Collaboration project to develop the fundamental science for intelligent built environmental systems to improve health, productivity, and safety of occupants.

Demonstration of an Integrated Energy Recovery Ventilator for Improved Indoor Air Quality and Energy: Syracuse University (Federal), Time Period: 02/01/07 - 12/31/08 Award Amount: \$166,969, PI: P. Hopke; Co-PI: A. Ferro, P. Jaques. This project is intended to demonstrate that the utilization of an IERV unit installed in the bedroom of an asthmatic will improve the environmental indoor air quality of the room and link to improved health and performance of the occupant.

Development of a Living Testbed for Built (Indoor) and Urban (Outdoor) Environmental Systems: Syracuse University (Federal), Time Period: 05/01/07 - 04/30/09 Award Amount: \$115,927.00, PI: A. Ferro. Subcontract: EPA (Prime); Syracuse (Contractor); Clarkson (Subcontractor). The goal of the project is to establish a testbed for: (1) investigating the dynamic interactions between a built environment, its immediate surrounding environment, and the nearby urban environment, and (2) assessing different strategies for improving indoor air quality (IAQ).

Effect of Resuspended Aeroallergens on Lung Inflammation in Asthmatic Children: Syracuse University  
EPA, Time Period: 06/18/07 - 08/31/08 Award Amount: \$130,000.00, PI: P. Hopke; Co-PI: A.  
Ferro, P. Jaques. The project examines the influence of resuspension as a source of airborne allergens  
and compares the effects of different microenvironments on the expression of the asthma in terms of  
markers of inflammation.

#### PROFESSIONAL ACTIVITIES

##### Memberships and Committees

American Association for Aerosol Research (AAAR) Board of Directors, term 2006-2009; Indoor  
Air Working Group Chair, 2003, 2004; Session Chair, Annual AAAR Conference, 2002-2006;  
Technical Program Committee, 2003, 2004; Internet Communications Committee, 2003-2006

Association of Environmental Engineering and Science Professors (AEESP) Logistics Committee,  
AEESP Research and Education Conference, 2005

International Society for Exposure Analysis (ISEA) Member

International Society of Indoor Air Quality and Climate (ISIAQ) Member

##### Reviewer

*Atmospheric Environment, Environmental Science & Technology* (American Chemical Society), *Aerosol  
Science & Technology* (American Association for Aerosol Research), *Science of the Total Environment  
Journal of the Air & Waste Management Association, Indoor Air, Journal of Occupational and  
Environmental Hygiene, Association of Home Appliance Manufacturers (AHAM)*

#### COURSES TAUGHT

CE 477/577 Atmospheric Chemistry, Clarkson University, Spring 2003, 2005, 2007

CEE 178/276 Introduction to Human Exposure Analysis, Stanford University, Spring 2000, 2001, 2002

CE 433/ES 533 Human Exposure Analysis, Clarkson University, Fall 2005, 2007

CE 491 Senior Design (Water Resources/Environmental), Clarkson University, Spring 2004, 2006

CE 340 Introduction to Civil and Environmental Engineering, Clarkson University, Fall 2003, 2004

CE 240 Earth Systems Science, Clarkson University, Spring 2006, 2008

#### RELATED PUBLICATIONS

Qian, Jing, [REDACTED]. 2008. "Resuspension of dust particles in a chamber and associated  
environmental factors." *Aerosol Science & Technology*, Vol. 42, pp. 566-578.

Qian, Jing, Kathleen R. Fowler, [REDACTED]. 2008. "Estimating the resuspension rate and residence  
time of indoor particles." *Journal of the Air & Waste Management Association*, Vol. 58, pp. 502-516.

Zhang, Xinyu, Jing Qian, [REDACTED], Goodarz Ahmadi. 2007. "Indoor Particle  
Detachment, Resuspension and Transport due to Human Activity." In press *Journal of  
Adhesion Science and Technology*.

[REDACTED], Lynn M. Hildemann. 2007. "Inhalation Exposure, Uptake, and Dose," in Ott, Wayne,  
Anne Steinemann, Lance Wallace, eds., *Human Exposure Analysis*, Taylor & Francis Group LLC.

Zhang, Xinyu, Goodarz Ahmadi, Jing Qian, and [REDACTED]. 2007. "Particle Resuspension  
and Transport due to Human Walking in Indoor Environment." 6th International Conference  
on Multiphase Flow (ICMF), July 9 – 13, Leipzig, Germany.

Qian, Jing, [REDACTED]. 2006. Estimating the resuspension rate of indoor particles.  
Proceedings of the Air & Waste Management Association Indoor Environmental Quality:  
Problems, Research and Solutions, July 17-19, Durham, NC.

[REDACTED] Royal J. Kopperud, Lynn M. Hildemann. 2004. "Elevated personal exposure to  
particulate matter from human activities in a residence." *Journal of Exposure Analysis and  
Environmental Epidemiology*, Vol. 14, pp. S34-S40.

- ██████████, Royal J. Kopperud, Lynn M. Hildemann. 2004. "Source strengths for indoor human activities that resuspend particulate matter." *Environmental Science & Technology*, Vol. 38, No. 6, pp. 1759-1764.
- Kopperud, Royal J., ██████████, Lynn M. Hildemann. 2004. "Outdoor versus indoor contributions to indoor particulate matter (PM) determined by mass balance methods." *Journal of the Air & Waste Management Association*, Vol. 54, pp. 1188-1196.
- ██████████. 2003. "Residence time of indoor particles following a pulse release." Proceedings of the Air & Waste Management Association (AWMA) Indoor Air Quality Problems and Engineering Solutions Specialty Conference, July 21-23, Research Triangle Park, NC.
- ██████████, Royal Kopperud, Lynn M. Hildemann. 2002. "Exposure to house dust from human activities." *Proceedings of the 9<sup>th</sup> International Conference on Indoor Air Quality and Climate* (Indoor Air 2002), June 30-July 5, 2002, Monterey, CA.
- McBride, Sandra J., ██████████, Wayne R. Ott, Paul Switzer and Lynn M. Hildemann. 1999. "Investigations of the proximity effect for pollutants in the indoor environment." *Journal of Exposure Analysis and Environmental Epidemiology*, Dec., Vol. 9, No. 6, pp. 602-621.
- ██████████, Lynn M. Hildemann, Sandra J. McBride, Wayne Ott, Paul Switzer. 1999. "Human exposure to particles due to indoor cleaning activities." Proceedings of the 7<sup>th</sup> International Conference on Air Pollution, *Air Pollution VII*, WIT Press, Ashurst, UK.

#### RELATED INVITED PRESENTATIONS

- ██████████. 2006. "Sources of indoor particulate matter: field studies at Clarkson University." Health Canada, Ottawa, ONT, September 27.
- ██████████. 2006. "PM Exposure Field Studies." Stanford University, Stanford, CA, April 13.
- ██████████. 2006. "Assessing human exposure to fine particulate matter." Department of Chemical Engineering, Clarkson University, Potsdam, NY, February 28.
- ██████████. 2005. "Human exposure to fine particulate matter from indoor and outdoor sources." King Mongkut's University of Technology, Thonburi, Thailand, September 1.
- ██████████. 2005. "Investigating residential human exposure to PM from indoor and outdoor sources." Stanford University, Stanford, CA, May 25.
- ██████████. 2005. "Studies of human exposure to particulate matter of indoor and outdoor origin." Rensselaer Polytechnic Institute, Troy, NY, March 9.
- ██████████. 2004. "Characterization of human exposure to particulate matter of indoor and outdoor origin." SUNY at Buffalo, Buffalo, NY, Dec 10.
- ██████████. 2004. "Fate and transport of indoor particles: how human activity affects pollutant exposure." University of Massachusetts, Amherst, MA, April 16.
- ██████████. 2004. "Characterizing particle concentration in the personal microenvironment." Carnegie Mellon University, Pittsburgh, PA, March 5.
- ██████████. 2003. "Human exposure to airborne particles: it mostly occurs indoors." SUNY Potsdam, Potsdam, NY, November 19.
- ██████████. 2003. "Human exposure to resuspended particulate matter in the indoor environment." Syracuse University, Syracuse, NY, September 5.
- ██████████. 2003. "Human exposure to indoor resuspended particulate matter." Stanford University, Stanford, CA, May 28.
- ██████████. 2002. "Elevated personal exposure to indoor particulate matter: investigation of the contributing factors." Virginia Polytechnic Institute and State University, Blacksburg, VA, April 18.
- ██████████. 2002. "Source contribution of indoor activities to human PM exposure." Lawrence Berkeley National Laboratory, Berkeley, CA, March 15.
- ██████████. 2000. "Personal exposure studies at Stanford University." Presented at the Mexico-Japan National Center for Environmental Research and Training (CENICA) International Workshop on Personal Exposure to Atmospheric Pollutants, November 13-14, Mexico City.

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## **EDUCATION**

- Doctor of Philosophy in Civil Engineering, The University of Texas at Austin, May 1998  
Dissertation Topic: Volatilization of Chemicals from Drinking Water to Indoor Air.
- Master of Science in Environmental Health Engineering, The University of Texas at Austin, August 1995
- Bachelor of Science in Civil Engineering, North Carolina State University, May 1993  
Summa Cum Laude Graduation Honors

## **PROFESSIONAL AFFILIATIONS**

- Air & Waste Management Association (AWMA)
- American Association for Aerosol Research (AAAR)
- American Society for Testing and Materials (ASTM)  
Subcommittee D22.05 Secretary  
Section Chair: Indoor Emissions Testing (for Subcommittee D22.05)
- Engineer-in-Training Certification

## **REVIEWER**

- *Journal of the Air & Waste Management Association*
- *Atmospheric Environment*
- *Environmental Science & Technology*
- *Indoor Air*
- *American Society of Heating, Refrigerating and Air Conditioning Engineers*
- The University of Texas at Austin External Advisory Board Member for the Integrative Graduate Educational and Research Traineeship (IGERT) program *Indoor Environmental Science and Engineering – An Emerging Frontier* sponsored by the National Science Foundation (2006 – present)
- GREENGUARD Environmental Institute ANSI Product Consensus Board Member (2007)
- Association of Home Appliance Manufacturers Standard Method of Measuring Performance of Portable Household Electric Room Air Cleaners (2004, 2005)

## **UNIVERSITY LECTURER**

- ENPM 634 Indoor Air Quality Engineering, University of Maryland, Spring 2002, 2004